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**NPR 7900.3A**  
Effective Date: April 08, 1999  
Expiration Date: December 31,  
2006

**COMPLIANCE IS MANDATORY**

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## Aircraft Operations Management w/Interim Revision to Chapter 3

**Responsible Office: Aircraft Management Division**

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Effective Date: April 8, 1999

## Preface

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### P.1 PURPOSE

This NPR establishes responsibilities, procedures, and requirements that will assist NASA Centers and other locations operating NASA aircraft to create local policies and procedures for the management of NASA aircraft resources, aircraft operations, and related matters. This NPR will provide a standard approach for the management and use of the NASA aircraft operations program. The purpose of the NASA aircraft operations program is to directly support the Agency mission in aeronautical research and development, space science and applications, space flight, astronaut readiness training, and related activities by providing operational flights in research and development aircraft, program support aircraft, and mission management aircraft. This document should be used in conjunction with other governing instructions, handbooks, and manuals.

### P.2 APPLICABILITY

This NPR is applicable to NASA Headquarters and NASA Centers, including Component Facilities.

### P.3 AUTHORITY

42 U.S.C. 2473 (c)(1), Section 203(c)(1) of the National Aeronautics and Space Act of 1958, as amended.

### P.4 REFERENCES

- a. NPD 7900.4, "NASA Aircraft Operations Management."
- b. 29 U.S.C. 651 et seq., the Occupational Safety and Health Act of 1970, as amended.
- c. 49 U.S.C. 1131-1135, authority of the National Transportation Safety Board (NTSB) to conduct investigations of public aircraft accidents.
- d. 49 U.S.C. 40102 (16) and (37), definition of "civil aircraft" and "public aircraft."
- e. 42 U.S.C. 2477, Section 6 of the NASA Authorization Act, 1968, as amended, establishing the Aerospace Safety Advisory Panel (ASAP).
- f. 29 CFR Part 1910, "Occupational Safety and Health Standards."
- g. 29 CFR 1960, "Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters."
- h. 14 CFR Parts 1-198, referred to herein as Federal Aviation Regulations (FAR).
- i. 41 CFR Part 101-37, "Government Aviation Administration and Coordination" (Federal Property Management Regulations).
- j. 41 CFR 301-10.260 to 301-10.262, "Government Aircraft" (General Services Administration).
- k. Executive Order 12196, dated February 26, 1980, "Occupational Safety and Health Programs for Federal Employees," 3 CFR (1980 Compilation).
- l. OMB Circular A-126, "Improving the Management and Use of Government Aircraft."

- m. NPD 8621.1G, "NASA Mishap Reporting and Investigating Policy."
- n. NPD 1800.2, "Occupational Health Program."
- o. NPD 1810.2, "Occupational Medicine Program."
- p. NPD 4200.1, "Equipment Management."
- q. NPD 4300.x, "NASA Personal Property Disposal Policy."
- r. NPD 8621.1G, "NASA Mishap Reporting and Investigating Policy."
- s. NPD 8710.2B, "NASA Safety and Health Program Policy."
- t. NPC 1156.14N, "Aerospace Safety Advisory Panel."
- u. NPC 1152.59F, "NASA Medical Boards In Support of Space Flight Operation."
- v. NPR 8715.x, "NASA Procedures and Guidelines for Mishap Reporting, Investigation, and Recordkeeping."
- w. NPR 4200.1, "NASA Equipment Management Manual."
- x. NPR 4300.x, "NASA Personal Property Disposal Procedures and Guidelines."
- y. NPR 4100.x, "NASA Materials Inventory Management Manual."
- z. NPR 8621.x, "NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping."
- aa. NPR 8715.x, "NASA Safety and Health Handbook, Occupational Safety and Health Program."
- bb. NPR 8715.x, "NASA Safety Manual."
- cc. NPR 8715.x, "NASA Emergency Preparedness Plan Procedures and Guidelines."
- dd. QS-ASO-xx-xxx, "Aviation Safety."
- ee. NTS 8719.x, "Aircraft Accident Investigations."
- ff. "Agreement Between The Department Of Defense And The National Aeronautics and Space Administration For Joint Investigation Of Aircraft Or Space System Mishaps," dated December 9, 1982.
- gg. "NASA-Navy Agreement," dated February 4, 1959, on Navy support of NASA aeronautical activities.
- hh. "Agreement On Use Of Air Force Aircraft By NASA," dated May 20, 1959.

## **P.5 CANCELLATION**

- a. NPR 7900.3(V1), "Aircraft Operations Management Manual," 3/1/92.
  - b. NPB 7900.3(V2), "Mission Management Aircraft Operations Manual," 3/1/92.
  - c. NPD 1152.47E, "Aircraft Operations Panel," 12/13/91.
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**/s/ Jeffrey E. Sutton**  
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# CHAPTER 1: Aircraft Operations, General

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## 1.1. Operations Guidelines

1.1.1. NASA will maintain a reasonable number of aircraft to meet its Research, Development, Test and Evaluation (RDT&E), and operational aeronautics mission requirements. Where practical, it will seek the use of aircraft that can support multiple mission requirements.

1.1.2. NASA will use its aircraft resources in an effective and efficient manner to conduct and support missions, approved/planned programs, and approved/planned projects.

1.1.3. NASA Center Directors and Enterprise Associate Administrators will continually reevaluate the requirements, use, and where appropriate, the operating cost of assigned NASA-controlled aircraft.

1.1.4. NASA will maintain the highest level of airworthiness and aircraft operating standards. Only qualified and designated personnel will pilot NASA-controlled aircraft. When acquiring used aircraft, NASA will only accept aircraft that are in good material condition, supported by a well-documented configuration control history, and accurate aircraft logs and records. Aircraft must be free of unacceptable flying qualities, unless those flying qualities are the reason for the acquisition.

1.1.5. NASA-controlled aircraft are subject to Federal Aviation Regulations with respect to the use of airspace, the control of air traffic, and aircraft registration. Aircraft on loan from the Armed Forces are not subject to civil registration. NASA-controlled aircraft must secure diplomatic clearance approval prior to entry into the airspace of a foreign country.

## 1.2. Assignment of Authority and Responsibility

1.2.1. The Assistant Administrator for Institutional and Corporate Management will designate aircraft classifications and assign aircraft to the appropriate Center. Assignments will be coordinated by the appropriate Enterprise Associate Administrators and Center Directors.

1.2.2. Enterprise Associate Administrators are responsible for the following:

1.2.2.1. Early coordination with the Office of Institutional and Corporate Management in establishing program or project plans involving the requirement for, acquisition of, assignment of, and/or operation of an aircraft.

1.2.2.2. Compliance with OMB Circular A-76 as it applies to the acquisition of aircraft, and the coordination of documentation requirements related thereto with the Associate Administrator for Management Systems and Facilities.

1.2.2.3. Continually reviewing current aircraft mission and program requirements, use, and associated costs.

1.2.2.4. Ensuring the effective management of aircraft programs and operations at their respective Centers.

1.2.3. Center Directors are responsible for the following:

1.2.3.1. Approving aircraft charters or leases for periods of 30 days or less with 7 days prior notice to the Aircraft Management Office within the Office of Institutional and Corporate Management.

1.2.3.2. Providing authorization for personnel to operate or to fly in NASA aircraft under their control.

1.2.3.3. Coordinating with the Office of Institutional and Corporate Management in establishing program or project plans involving the requirement, assignment, and operation of aircraft.

1.2.3.4. Continually reviewing current aircraft program requirements, use, and associated costs.

Ensuring the effective management of program support and mission management aircraft operations, as applicable, at each respective Center.

Ensuring compliance with 41 CFR 101-37 and Office of Management and Budget (OMB) Circular A-126.

Supporting Intercenter Aircraft Operations Panel (IAOP) reviews with manpower and travel, as required.

Providing overall responsibility for the airworthiness and flight safety of assigned aircraft.

1.2.4. The IAOP is responsible for the following:

1.2.4.1. Advise the Associate Administrator for Management Systems and Facilities regarding operational and management policy for NASA aircraft.

1.2.4.2. Conduct periodic meetings to review with and advise the Aircraft Management Team concerning uniform policies and procedures related to aircraft operational matters affecting all Centers and to make recommendations to the Aircraft Management Team regarding policies, procedures, and guidelines that may be applicable to all Centers.

1.2.4.3. Utilize other personnel, as appropriate, from other Governmental agencies, Centers, NASA Headquarters, and/or industry to advise and to make recommendations to the IAOP concerning the effectiveness of NASA aircraft operations.

1.2.4.4. Conduct reviews of a special nature at the request of the Associate Administrator for Management Systems and Facilities and periodic reviews of all aspects of aircraft operations at NASA Centers, including compliance with applicable Federal regulations and Headquarters and Center policies, procedures, and guidelines.

1.2.4.5. Coordinate findings and recommendations of IAOP reviews dealing with institutional management issues with the appropriate institutional Associate Administrator.

1.2.5. The Lead, Aircraft Management Team, is responsible for the following:

1.2.5.1. Coordinate the formulation of Agencywide policies, procedures, and guidelines concerning aircraft operation and ensure their effective and efficient communication to Centers and appropriate Headquarters offices.

1.2.5.2. Advise and assist the , Enterprise Associate Administrators, and Center Directors concerning the acquisition/disposition process.

1.2.5.3. Advise the Associate Administrator for Management Systems and Facilities regarding the establishment of policy guidelines for the use of NASA aircraft.

1.2.5.4. Maintain liaison with other Government agencies and the private sector on matters pertaining to aircraft operations, maintenance, and management practices that are common to all Centers.

1.2.5.5. Maintain a current inventory listing of all NASA-controlled aircraft with their respective assignments and a roster of assigned pilots.

1.2.5.6. Provide coordination and other assistance in the planning and implementation of IAOP intercenter teams as they review and evaluate the adequacy of Center organizations, facilities, and procedures for aircraft operations.

1.2.5.7. Provide intercenter and interagency coordination for logistics support to Centers, as necessary.

1.2.5.8. Provide Headquarters personnel authorized to perform official flight duties, as necessary.

1.2.5.9. Collect, collate, and forward the data inputs provided by Center reports (e.g., FAMIS) to other federal agencies.

## **1.3. Acquisition and Disposition of Aircraft**

1.3.1. General Guideline. Acquisition of additional aircraft to meet Agency requirements will be conducted in accordance with established Federal agency acquisition guidelines, including OMB Circular A-76, and initiated only after the following alternatives have been considered in the order stated and after coordination with the Aircraft Management Team: (1) use of available NASA aircraft resources; (2) use of public aircraft owned by other Government agencies through loan or transfer; (3) charter or lease of civil aircraft.

1.3.2. The Associate Administrator for Management Systems and Facilities will have the approval authority for aircraft acquisition requests that have been properly coordinated with appropriate Enterprise Associate Administrators, the Office of the General Counsel, the Office of the Chief Financial Officer (CFO)/ Comptroller, the Office of Legislative

Affairs, and the Office of External Relations (if Department of Defense [DoD] related). The Assistant Administrator for Institutional and Corporate Management is also responsible for long-term aircraft leases.

1.3.3. The Enterprise Associate Administrators will establish the need for and funding level of each aircraft assigned to support their programs and will continually review current aircraft requirements and associated costs. When a prospective new aircraft is not intended to be used to conduct Research and Development (R&D), the Enterprise Associate Administrators should ensure that the provisions of Office of Management and Budget (OMB) Circular A-76 are complied with prior to acquiring the aircraft to ensure that the services, which will be provided by the prospective new aircraft, cannot be more cost effectively obtained from and operated by the private sector. Enterprise Associate Administrators are responsible for the assignment of research and support aircraft among the Centers under their jurisdiction and will keep the Assistant Administrator for Institutional and Corporate Management informed as those reassignments occur.

1.3.4. The Office of External Relations will provide the interface between NASA and elements of the DoD, as necessary, for the effective coordination of matters common to all Centers relating to the acquisition of aircraft, spares, and equipment from DoD or to aircraft used in support of joint programs between NASA and DoD. Assistance will be provided to specific Centers on specific problems, as necessary, and when requested by the Centers.

1.3.5. The Aircraft Management Team will assist the Assistant Administrator for Institutional and Corporate Management in developing Agencywide policies governing the acquisition and disposition of NASA-controlled aircraft. The Aircraft Management Team is responsible for the advocacy for and assignment of NASA Mission Management Aircraft, and will assist Centers with acquisition and disposition of all aircraft when requested.

1.3.6. Center Directors are responsible for the technical assessment, cost evaluation, acquisition, use, and disposition of all aircraft under their control. In addition, they are responsible for the acquisition of aircraft used solely as wind tunnel or other nonflyable test models. Center Directors are responsible for submitting to, and coordinating with, the Assistant Administrator for Institutional and Corporate Management all aircraft acquisition and disposition proposals through the appropriate Enterprise Associate Administrators and for meeting aircraft data reporting requirements specified by NASA directives and other Federal regulations, such as those outlined in paragraph 1.3.7.3.

#### 1.3.7. Aircraft and Aircraft Material Acquisition Procedures

1.3.7.1. Aircraft whose intended use is for purposes other than for "parts aircraft" are subject to the aircraft acquisition process in accordance with all applicable Federal regulations.

1.3.7.2. Aircraft whose intended use upon acquisition are to be solely for "parts aircraft" may be obtained at the discretion of the Center Director.

1.3.7.3. When acquired, all aircraft, including those obtained solely for spare parts, must be entered into each respective Center's property inventory in a manner acceptable to that Center's property management personnel and in accordance with NPR 4200.1, Equipment Management Manual. All aircraft are required to be entered into the Federal Aviation Management Information System (FAMIS) and the NASA Equipment Management System (NEMS). All aircraft, excluding parts aircraft, are required to be registered with the Federal Aviation Administration (FAA).

1.3.7.4. Aircraft material, such as spare parts, must be acquired, managed, and controlled according to NPR 4100.x, NASA Materials Inventory Management Manual.

1.3.7.5. Cannibalization of aircraft will be accomplished and recorded in accordance with approved NASA, DoD, or FAA aircraft maintenance procedures.

#### 1.3.8. Aircraft Disposition.

1.3.8.1. A NASA-controlled aircraft will be disposed of when it is excess to the current and anticipated needs of the Agency. Disposal of NASA-owned aircraft will be in accordance with Federal Property Management Regulations and the applicable portions of NPR 4300.x, NASA Personal Property Disposal Procedures and Guidelines, unless otherwise specifically authorized. The applicable portions of aircraft disposition will be coordinated with the Aircraft Management Team before disposition action is taken.

1.3.8.2. When an aircraft which has an FAA Certificate of Airworthiness is removed from the inventory, the Certificate will be removed from the aircraft and mailed to the FAA.

1.3.8.3. When an aircraft is removed from the inventory which is not capable of obtaining an FAA Certificate of Airworthiness, or is deemed by the Center flight operations office to be unsafe for civil use, the manufacturer's placard will be removed. Every effort will be made, including destruction of the aircraft, to ensure that aircraft parts which are

not FAA-certified are kept out of circulation.

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## CHAPTER 2: NASA Aircraft Operations Guidelines

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### 2.1. Operations

2.1.1. Flight Authorization. Centers shall establish procedures to ensure that all flights of NASA aircraft are properly approved and documented. Approval will normally be made by a supervisory aircraft operations pilot or other appropriate aircraft operations supervisory personnel. A documented and approved process to cover absences of flight approval authorities shall be implemented.

2.1.2. NASA Aircraft Use. NASA aircraft shall be used primarily for research and development, program support, astronaut space flight readiness training, or mission management flights. Other uses may be authorized to accomplish established and approved NASA objectives, such as --

2.1.2.1. Proficiency flying, including cross-country, to meet currency and annual requirements.

2.1.2.2. Maintenance checks and/or ferry flights.

2.1.2.3. Logistics support (excluding experimental aircraft).

2.1.2.4. Emergency and humanitarian operations.

2.1.3. Pilot Assignments for NASA Aircraft

2.1.3.1. The Pilot-in-Command (PIC) of any NASA aircraft shall be a designated NASA pilot. Designated NASA pilots are those who perform piloting duties as a part of their official Position Description, to fulfill NASA contract requirements, or in accordance with an interagency agreement.

2.1.3.2. Only pilots designated by NASA shall be assigned piloting duties on passenger-carrying flights.

2.1.3.3. Demonstration, evaluation, or training flights involving non-NASA pilots shall be documented and approved by the appropriate program manager and an appropriate supervisory pilot.

2.1.3.4. The PIC shall ensure that appropriate passenger briefings are conducted and include pertinent egress, safety, and emergency information.

2.1.4. Documentation. Records pertaining to NASA-flight activities shall include, as a minimum, the following:

2.1.4.1. Approval of mission.

2.1.4.2. Name, grade, and duty status of all aboard.

2.1.4.3. Purpose of the flight.

2.1.4.4. Routing and/or flight events, and approximate take-off and landing times.

### 2.2. Flight Crews

2.2.1. NASA flight crews shall be qualified in accordance with standards set forth in this NPG and individual Center instructions. Records of qualification and flight evaluation are required. A review of pilot and crew qualifications shall be made prior to flight assignment to ensure that prerequisites for the intended mission are met. The Center Director shall designate the crewmembers for aircraft that are under the Center Director's purview.

2.2.2. Pilot Proficiency Program. A comprehensive pilot proficiency program shall be established at each Center for pilots flying research and program support aircraft. This program should be specific to the assigned mission and reflect an indepth evaluation of pilot proficiency and capability. Elements of the program should include the following:

2.2.2.1. Currency requirements. Procedures shall be established to ensure that pilots obtain at least 100 flying hours per year. A portion of that time must include night flying, if night flying is required to meet mission requirements, and instrument flying, to include instrument approaches. Procedures shall be established to ensure that flying time, night flying (if required), and instrument flying are achieved proportionally throughout the year. Centers may impose additional proficiency requirements on flight crews to meet mission needs.

2.2.2.2. Pilot Annual Evaluations. Flight proficiency shall be evaluated at least once per year by a NASA or NASA-designated pilot who is an instructor pilot/flight examiner in the aircraft used for the evaluation.

2.2.2.3. Pilot Instrument Evaluations. Instrument flying proficiency shall be evaluated at least once per year. The instrument evaluation may be combined with the annual proficiency evaluation or completed separately. The instrument proficiency check may be accomplished in a level C flight simulator.

2.2.2.4. Simulations. The use of simulation for supplemental training is encouraged. Realistic, mission-oriented scenarios may be used to complement the annual proficiency and instrument check requirements.

2.2.2.5. Tests. Written tests shall be administered and reviewed annually to ensure current pilot knowledge of air traffic control procedures, aircraft/back-up systems, normal and emergency operating procedures, Agency and local instructions, and other pertinent regulations and procedures. The tests shall be developed at each Center and administered under the supervision of an appropriate supervisory pilot. Tests may be open or closed book or a combination of both.

2.2.2.6. Reviews. Procedures shall be established to ensure that pilot flight evaluation documentation is reviewed by a supervisory aircraft operations official. Flight evaluations given by supervisory pilots shall be reviewed by the Center Aviation Safety Officer or training officer to confirm the appropriateness of the evaluation procedures. Pilot and other air crew evaluations shall be forwarded to the appropriate management level, to be determined at each Center, for review and concurrence.

### 2.2.3. Aviation Medical Program

2.2.3.1. All pilots shall be certified medically at least annually. Pilots 55 years of age and older shall be medically certified every 6 months. Details of the requirements are listed in Appendix A, Aviation Medical Program.

2.2.3.2. Copies of current medical certification shall be kept on file at the pilot's operating site.

2.2.3.3. Procedures shall be established for an Agency medical review by qualified medical personnel of the medical examination results for pilots who do not meet the required standards.

2.2.3.4. The establishment of flight crew health maintenance programs is encouraged. These normally include a prevention program, health risk analysis, and consultations.

2.2.3.5. Pilots of mission management aircraft shall comply with the requirements contained in Federal Aviation Regulations, Part 65, Medical Standards and Certification.

2.2.4. Alcohol and Drugs. Each Center Director shall develop a policy for personnel acting as crewmembers on NASA aircraft that is at least as restrictive as FAR Part 91, General Operating and Flight Rules, concerning the use of alcohol and drugs.

2.2.5. Pilot Release from Flight Status. Center Directors shall establish procedures, in coordination with their personnel offices, to ensure that pilots shall be assigned to duties not involving flying if they become medically disqualified or if they are unable to satisfactorily demonstrate flying performance. These occurrences shall be documented to include statements of fact and rationale leading to disposition and final decision. The documentation shall be reviewed by the Center Director or designee.

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# CHAPTER 3: Mission Management Aircraft Operations

## (Interim Revision to Chapter 3 of NPR 7900.3, Aircraft Operations Management, NM 7900-30)

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### 3.1. Purpose

This chapter establishes procedures and guidelines for management, utilization, operation, and control of NASA Mission Management Aircraft (MMA) in accordance with NPD 7900.4, Aircraft Operations Management, and OMB Circular A-126, Improving the Management and Use of Government Aircraft.

### 3.2. Guidelines

3.2.1. NASA MMA shall be operated in accordance with the procedures specified in FAR Part 91, subparts A and B, and with the provisions of this Chapter, whichever is more restrictive. Procedures of the International Civil Aviation Organization (ICAO) shall apply in lieu of FAR Part 91 on international flights.

3.2.2. MMA are used primarily to transport management and staff personnel to provide direction, coordination, and oversight in support of NASA's mission. When not otherwise scheduled, the aircraft may be used for the transportation of other personnel on official Government business when the itinerary, schedule, cost, or other factors make the use of those aircraft more advantageous to the Government than other methods of transportation.

3.2.3. Every effort shall be made to minimize flights that are duplicative, require excessive deadheading, involve long, unproductive layovers, or involve short stage-lengths. Whenever practicable, intercenter airlift requirements shall be combined.

3.2.4. Each person traveling aboard NASA MMA must be on official business and have either a NASA travel authorization approved in accordance with NASA directives or a travel authorization approved by another Federal agency or congressional committee. Travel authorized by another Federal agency or congressional committee must be approved by an Official-in-Charge of a Headquarters Office, a Director of a Center, or the appropriate designee. In exceptional circumstances, when approved by an Enterprise Associate Administrator or Center Director, other persons may be permitted to travel aboard NASA MMA for emergency or humanitarian purposes or on a reimbursable basis.

3.2.5. All passengers shall be manifested on NASA Form 1269, Flight Itinerary and Passenger Manifest, or an authorized substitute form. Prior to departure, the PIC shall certify the accuracy of the manifest and file a copy with a responsible ground agency such as a military, civil, or NASA operations office. If a responsible NASA official acting as a ground coordinator for the flight is aware of all changes to the manifest, the PIC is relieved of this requirement. The publication of specific local procedures is required to ensure that there is always a readily available accurate list of personnel aboard NASA aircraft.

3.2.6. NASA MMA shall be designated by the Associate Administrator for Management Systems and Facilities.

3.2.7. NASA MMA are public aircraft as defined by 49 U.S.C. 40102 (37), but are operated as civil aircraft when carrying passengers. Maintenance standards shall meet those required for retention of Federal Aviation Administration (FAA) airworthiness certification. The Airworthiness Certificate shall be displayed per FAR 91.203 (a) and (b). MMA shall be operated and maintained in accordance with FAR Parts 21, 39, 43, 61, 65, and 91.

### 3.3. Classification of Aircraft Use

3.3.1. Required Use is defined in Office of Management and Budget (OMB) Circular A-126 as "the use of Government aircraft because of bona fide communications or security needs of the Agency or exceptional scheduling requirements." Its use shall be controlled only by the Administrator or higher authority. Normally, NASA does not use this travel classification.

3.3.2. Mission Required use is defined as the use of Government aircraft in the discharge of an agency's official responsibility. This includes, but is not limited to, space and science applications, space flight mission support, and aeronautical research. Mission Required use does not include official travel to give speeches, to attend conferences or meetings, or to make routine site visits. Although not required by OMB Circular A-126, NASA policy requires these trips to be cost-justified, using the computation portion of NASA Form (NF) 1653 to ensure that other potentially cheaper travel options are considered. Examples of Mission Required use include the following:

3.3.2.1. Support for Flight Readiness Reviews, Launch-2 activities, Launch-1 activities, and Launch or Landing activities of current Shuttle Launches.

3.3.2.2. Support for launches of other NASA-related payloads (e.g., Ariane launches, Delta launches).

3.3.2.3. Support for Launch Recovery operations.

3.3.2.4. Support for In-Space operations.

3.3.2.5. Support for activities directly related to approved NASA programs or projects (e.g., payload operations, scientific missions, astronaut training, high speed research, advanced subsonic transport research).

3.3.3. Other Official Travel is defined as use of a Government aircraft for all other travel to conduct Agency business. Travel on NASA aircraft by NASA officials in this category must be authorized in advance on a trip-by-trip basis. The travel authorization must be reviewed for compliance with 41 CFR 101-37 and OMB Circular A-126 by the General Counsel or principal deputy for Headquarters flights or Chief Counsels or their principal deputies for Center flights. Examples of Other Official Travel include the following:

3.3.3.1. Support to officials traveling for the specific purposes of giving speeches, keynote addresses.

3.3.3.2 Support to officials to accept significant awards at banquets, balls, dinners, luncheons.

3.3.3.3. Support to officials making routine site visits.

3.3.3.4. Support to NASA-sponsored meetings such as NASA advisory committees, councils and board meetings, Equal Employment Opportunity conferences, and contractor conferences.

3.3.4. Authorization for Other Official Travel. Travel on NASA aircraft by NASA officials in the "Other Official Travel" category shall be authorized only as follows:

3.3.4.1. When no commercial airline or aircraft (including charter) service is reasonably available (i.e., able to meet the traveler's departure and/or arrival requirements within a 24-hour period), unless the traveler demonstrates that extraordinary circumstances require a shorter period to effectively fulfill Agency requirements. When using "No commercial airline or aircraft service is reasonably available" as the rationale to justify the use of NASA aircraft, actual airline schedule information must be provided as part of the aircraft request.

3.3.4.2. When a flight is being made to support Mission Required travel, secondary use of the aircraft for additional Other Official Travel may be presumed to result in cost savings. Therefore, a cost comparison of such additional "Other Official" travelers is not required.

3.3.5. Records of all MMA missions shall be retained for at least 2 years.

3.3.6. Use of program support aircraft for mission management purposes, regardless of travel classification category, shall follow the same requirements as use of MMA, to include compliance with 41 CFR 101-37 and OMB Circular A-126, development of a cost justification using NF 1653, and obtaining authorization approvals.

### 3.4. Approval of Flights

3.4.1. The Center Director is responsible for the approval of MMA requests submitted for use of the Center's assigned aircraft. The authority may be delegated to a level no lower than a Directorate. Center approving officials shall

ascertain that, prior to each flight approval, the purpose of the trip is for official business as described in paragraph 3.3 and one of the following criteria is satisfied:

3.4.1.1. No commercial aircraft or airline service is reasonably available to effectively fulfill the transportation requirement.

3.4.1.2. The variable cost of using MMA is not more than the cost of using commercial aircraft or airline service. The cost of using commercial aircraft or airline service includes, for example, the cost of any additional travel and employee's lost work time.

3.4.1.3. The flight is being made to meet aircraft maintenance or aircrew training requirements.

## **3.5. Responsibilities Associated with Mission Management Aircraft**

3.5.1. The Associate Administrator for Management Systems and Facilities is responsible for the following:

3.5.1.1. Approving and delegating approval authority for policies and other matters involving NASA MMA and for ensuring that the number of aircraft and their capacity to carry passengers and cargo does not exceed that required to meet Agency missions.

3.5.1.2. Coordinating Agency planning efforts involving acquisition, assignment, or disposition of MMA with Institutional and Enterprise Associate Administrators and Center Directors.

3.5.1.3. Continually reviewing MMA requirements, utilization, and associated costs.

3.5.2. Center Directors are responsible for the safe and efficient operation and utilization of assigned aircraft. They shall ensure that aircraft are used properly and that the functions, including contract functions, performed by their aircraft comply with NASA, FAA, OMB, and other Federal requirements, policies, and procedures. Center Directors should establish more restrictive standards when local conditions dictate. In addition, they are specifically responsible for the following:

3.5.2.1. Ensuring compliance with 41 CFR 101-37 and OMB Circular A-126.

3.5.2.2. Designating a Senior Management official who shall be responsible for approving the use of Agency aircraft for mission management purposes.

3.5.2.3. Designating crew members who operate or fly in Center aircraft.

3.5.2.4. Annually reviewing and documenting the Center's continuing need for MMA and the cost-effectiveness of aircraft operation, as reflected in the NASA Financial Management Manual. Content of this review should include, in narrative format, a comparison of the past years' use with future requirements. Upon completion of the annual review, a copy should be forwarded to the Aircraft Management Team (HQ/Code JLP). When possession of an aircraft can no longer be justified, Center Directors shall identify such aircraft for reassignment or disposal, as appropriate.

3.5.3. The Lead, Aircraft Management Team, is responsible for the following:

3.5.3.1. Providing oversight, functional management, and direct staff support to the Administrator concerning Agencywide policies, procedures, and guidelines for the management and use of MMA.

3.5.3.2. Developing and coordinating plans for the acquisition, assignment, and disposition of MMA in accordance with applicable Federal guidelines.

3.5.3.3. Developing standard Agencywide maintenance and operating requirements and policies, including minimum training and qualification requirements for aircrew and maintenance personnel.

3.5.3.4. Coordinating periodic meetings with Center Aircraft Operations Chiefs and Maintenance Chiefs to review and update Agencywide operations and maintenance requirements, policies, and procedures.

3.5.3.5. Working with subpanels of the IAOP in establishing airworthiness review procedures for MMA.

3.5.3.6. Reviewing and approving modifications or alterations to MMA.

3.5.3.7. In conjunction with the Chairman, IAOP, coordinating and participating in the conduct of operational reviews to ensure the adequacy and standardization of procedures, aircrew training and qualification programs, and aircraft maintenance and inspection programs at Centers operating MMA.

3.5.3.8. Evaluating cost and utilization data for MMA and for providing a periodic summary analysis of all administrative cost and utilization data to the Associate Administrator for Management Systems and Facilities.

3.5.3.9. Providing Centers with guidance and average variable cost data for use in accomplishing cost comparisons.

#### 3.5.4. The Intercenter Aircraft Operations Panel (IAOP)

3.5.4.1. The IAOP performs an Agencywide coordination and communication function to recommend requirements, policies, and operational improvements that can be used by the NASA Centers to improve local operations policies and procedures, and by the AMT to improve Agency policies, procedures, and guidelines.

3.5.4.2. For each type of MMA, the Chairperson may establish Operations and Maintenance Subpanels with responsibility for standardizing aircrew and maintenance procedures, for establishing aircrew and maintenance training/qualification standards, and for conducting airworthiness reviews.

3.5.4.3. Subpanel membership shall be composed of appropriate Chiefs of Aircraft Operations and Chiefs of Aircraft Maintenance or their designees, as well as a representative from the NASA Headquarters Aircraft Management Team who shall act as permanent Executive Secretary.

3.5.4.4. Subpanels shall be convened in formal meetings at least annually; however, the subpanels shall act as standing committees subject to call by the Chairperson to review urgent business. Informal meetings may be conducted by teleconference.

3.5.4.5. Subpanels, with IAOP Chairperson concurrence, shall forward their recommendations through the Aircraft Management Team to the Associate Administrator for Management Systems and Facilities for final approval. Headquarters-approved recommendations shall be considered directive in nature.

#### 3.5.5. All Crew Members

3.5.5.1. Maintaining the highest standards of safety shall be the primary concern of all crew members. Other concerns, such as passenger service, courtesy, promptness, and reliability are important but must always be secondary to safety. All crew members shall comply with the provisions set forth in this NPG and with FAA, Original Equipment Manufacturer (OEM), and other applicable directives, regulations, and instructions.

3.5.6. An Aircraft Commander shall be designated as PIC and charged with the responsibility of conducting each NASA mission management flight.

3.5.6.1. The PIC is responsible for exercising complete authority, without limitation, over the command and supervision of assigned crew members during flight and crew duty time.

3.5.6.2. The PIC is solely responsible for accomplishing the mission assigned to the aircraft, for all facets of its operations, and for exercising final authority over the safety of the aircraft and its passengers. The PIC shall make the decision to delay or divert a flight for operational reasons such as weather, aircraft conditions, or pilot fatigue. The PIC shall not be overruled by other persons embarked. A decision by the PIC to delay or divert a flight for the above reasons on the grounds of safety shall not be the basis for disciplinary action.

3.5.7. Second-in-Command (SIC). The pilot assigned to duty as SIC during flight shall be designated as either an aircraft commander, first pilot, or second pilot. It is the SIC's responsibility to assist the PIC and to be able to assume command in the event of the PIC's absence or incapacitation.

3.5.7.1. A first pilot shall be a highly qualified copilot who may, at the discretion of the PIC, fly the aircraft from either the left or right seat on both passenger and training missions.

3.5.7.2. A second pilot shall be a qualified copilot who may, at the discretion of the PIC, fly from the left seat on missions when no passengers are on board, such as ferry or training missions. A second pilot may not make takeoffs or landings from either seat with passengers on board.

## 3.6. Operations

3.6.1. NASA MMA are public aircraft, as defined by 49 U.S.C. 40102 (37), but are operated as civil aircraft when carrying passengers.

3.6.2. Program Support aircraft used as MMA shall meet the FAA certification standards required of MMA.

3.6.3. Airworthiness of NASA MMA shall, as a minimum, meet the standards set forth in the Federal Aviation

Regulations for similar business type aircraft. MMA shall be maintained as required for retention of FAA airworthiness certification.

3.6.4. The cost of operation and the utilization of MMA shall be reported in accordance with Financial Management Manual 9353-6 (RCS-10-0000-00271).

### **3.7. Use of Program Support Aircraft for Mission Management Purposes**

3.7.1. Program support aircraft directly support NASA programs and projects, while MMA are used to transport management and staff personnel so that they may more efficiently accomplish their oversight, direction, and communications roles.

3.7.2. The use of program support aircraft for mission management purposes shall be restricted to exceptional circumstances. This policy may be deviated from on an exception basis after all of the following requirements have been addressed:

3.7.2.1. Such use shall not conflict with program support functions.

3.7.2.2. Use only when MMA are not readily available or when such use would be impractical; e.g., when using an available MMA would create excessive deadheading or would exceed crew duty restrictions.

3.7.2.3. Subject such use to the same cost comparisons required for MMA flights unless the usage is an "add on" to a previously scheduled program support flight, such as a returning flight which would otherwise have empty seats. For purposes of this paragraph, incremental (variable) costs may be used to perform cost comparisons.

3.7.2.4. Use only with the approval of the Center Director and the Associate Administrator for Management Systems and Facilities.

3.7.2.5. Document the justification for and approval of each use and retain the documentation for 2 years. Submit a summary report of such usage to the Office of Management Systems and Facilities semiannually.

### **3.8. Waivers and Supplements**

3.8.1. Waivers. When deviations from this NPG are necessary, submit requests for waivers from the Center Director through the appropriate Program Office to the Lead, Aircraft Management Team, NASA Headquarters. Prior written approval from the Associate Administrator for Management Systems and Facilities shall be obtained before implementing procedures that are less restrictive than those contained in this directive.

3.8.2. Supplements. Appendix I is reserved to provide Centers with a means for establishing, within a single document, local guidance appropriate to MMA operations. Copies of supplements should be provided to the Lead, Aircraft Management Team, for review and, if appropriate, distribution to other users of this NPG.

### **3.9. Flight Crew Qualifications**

3.9.1. Designation. Prior to assigning personnel to flight crew duties on NASA MMA, the requirements contained in this chapter must be accomplished; the crew member must be designated in writing to the respective crew position; and required training must be completed and documented in the individual's training file.

3.9.2. Training File. A training file shall be maintained for each flight crew member. This file shall contain all documentation pertaining to crew qualification and training. The documents may be retained by the crew member upon termination of the crew members assignment. The file shall contain the following minimum documentation:

3.9.2.1. Qualifications. File shall contain copies of certificates of professional and medical qualifications; e.g., copies of pilots or mechanics licenses and shall contain a copy of the letter designating the individual to his/her current crew position.

3.9.2.2. Ground Training. File shall contain a list of ground training accomplishments (including simulator training) indicating dates, location, and amount of training. A record of refresher training must be maintained for the past 2 calendar years.

3.9.2.3. Flight Training. File shall contain a list of flight training accomplishments and flight evaluations for the past 2 calendar years.

3.9.3. Prerequisites, All Pilots. Possess an FAA First Class Medical Certificate issued within the past 12 months by a NASA-approved medical examiner.

3.9.4. Prerequisites, Aircraft Commanders. Possess an FAA Airline Transport Pilot (ATP) Certificate with a type rating, if appropriate, in the aircraft assigned, and have been certificated a pilot for at least 5 years. To be considered for an aircraft commander position, the applicant must meet the following minimum flight experience requirements:

3.9.4.1. 2500-pilot hours (500 multiengine).

3.9.4.2. 200-pilot hours in type.

3.9.4.3. 200-instrument-pilot hours (100 actual).

3.9.4.4. In exceptional circumstances, the 200-pilot hours in type requirement may be reduced if the pilot is qualified in similar type. The justification shall be submitted to the Lead, Aircraft Management Team, NASA Headquarters.

3.9.5. Prerequisites, First Pilots. Possess an FAA Airline Transport Pilot Certificate with a type rating in the aircraft assigned, if appropriate, and have flown at least 50 hours in type.

3.9.6. Prerequisites, Second Pilots. Possess an FAA Commercial Pilot Certificate with appropriate category, class, and instrument ratings, and have flown at least 10 hours in type, 8 of which may be in an approved simulator.

3.9.7. Flight Examiners. Pilot flight examiners shall be selected by the chief of flight operations from highly qualified pilots who have demonstrated the skill, maturity, and temperament to perform evaluator duties.

3.9.8. Instructor Pilots. Instructor pilots shall be selected by the chief of flight operations from highly qualified aircraft commanders who have demonstrated the skill, maturity, and temperament to perform instructor duties.

3.9.9. Flight Maintenance Technician. Flight maintenance technicians must possess an FAA Airframe and Powerplant (A&P) Certificate. They must possess a valid FAA Third Class Medical Certificate issued within the past 12 months by a NASA-approved medical examiner.

## 3.10. Crewmember Training

3.10.1. The MMA training program is established to ensure that each crew members is adequately trained to perform assigned duties safely and proficiently. To the extent practical, procedures training shall be standardized for each type of MMA.

3.10.2. The NASA Headquarters Aircraft Management Team, through the appropriate MMA Operations Subpanels of the IAOP, shall be responsible for review and approval of standardized aircraft operating procedures.

## 3.11. Ground Training

3.11.1. Survival Training. Each crew member shall receive basic survival training on a one-time basis. Additional survival training may be required by appropriate Center management for those crew members engaged in frequent over water or remote area flights. Appropriate training received prior to NASA employment, such as military survival training courses, may be credited for this requirement. Newly assigned personnel, with no previous survival training, must complete this requirement within 6 months of being assigned to flight crew duties. Pilots shall not be designated PIC until this requirement is satisfied.

3.11.2. Physiological Training. Prior to initial designation, crew members shall receive instruction in the physiological aspects of high altitude flight including altitude chamber indoctrination. Refresher training academics shall be accomplished every 5 years. Refresher altitude chamber indoctrination is optional. Altitude chamber training received prior to initial designation shall satisfy this requirement.

3.11.3. Emergency Egress Training. Prior to initial designation and annually thereafter, each crew member shall receive emergency egress training on each type of aircraft assigned. Training should include instruction on the location and operation of normal and emergency exits and cabin emergency equipment such as fire extinguishers and life vests.

3.11.4. Aircraft Systems Training. Each crew member shall complete an approved formal course of instruction in the type aircraft to be flown, including a study of the systems and procedures applicable to the individual's crew position. The term formal course is defined as one that is provided by a manufacturer, a commercial activity specializing in pilot

training, or other organization approved by the appropriate MMA Operations Subpanel.

3.11.4.1. Initial Training. Prior to initial designation, each crew member shall complete a formal systems training course consisting of a minimum of 20 hours of academic training.

3.11.4.2. Refresher Training. A formal systems training course is required every 6 months for pilots and every 18 months for flight maintenance technicians. The course shall consist of a minimum of 7 hours of academic training. At the discretion of the Chief of Aircraft Operations, this requirement may be modified for aircraft commanders who have at least 3 years experience and 500-hours flying time in the type of aircraft to which assigned. In these instances, a 7-hour local refresher ground training course may be substituted for alternate formal courses.

## 3.12. Flight Training Phase

3.12.1. Flight training is designed to provide the crew member with hands-on experience under controlled conditions. Flight training shall be conducted under the supervision of a NASA-designated flight examiner or instructor pilot or an FAA-certificated flight instructor either in an approved simulator or in an aircraft. Flight training, except that which is associated with transportation procedures, shall not be conducted while passengers are on board.

3.12.2. Initial Pilot Training. Prior to initial designation, each pilot shall receive a minimum of 10 hours of flight training, 8 hours of which may be conducted in a simulator.

3.12.3. Refresher Pilot Training. In each 6-month period, pilots shall receive a minimum of 6 hours flight or simulator training. At least one-half of this training shall be completed in the pilot's (left seat) position. Because of the safety and efficiency provided by modern visual, motion simulators, maximum use should be made of these facilities to satisfy this training requirement. With the approval of the Chief of Aircraft Operations, one of the semiannual flight or simulator training requirements may be waived for pilots with 3 years and 500 hours' experience in type and for temporary pilots serving in a second pilot capacity. This can be done only after all other applicable requirements of this directive are met and that the temporary pilot successfully completes a proficiency and instrument competency check in type given by an approved NASA flight examiner within the preceding 6 months.

3.12.4. Flight Maintenance Technician Training. Maintenance technicians perform in-flight duties involving , passenger safety aboard certai , n NASA mission management aircraft, such as Gulfstream I and III aircraft, as required by FAA regulations. Prior to initial designation, each maintenance technician shall receive traini , ng in such areas as traffic awareness and "see-and-avoid" techniques, aircraft servicing, weight and balance, and passenger care. This training may be conducted on a regular passenger mission under the supervision of a fully qualified flight mechanic or aircraft commander. Initial training shall consist of at least two passenger missions. At least one mission shall include an overnight stop away from home station.

## 3.13. Overdue Training

With the exception of simulator training, which shall have a 2-month grace period, refresher ground and flight training shall be considered overdue if not completed by the end of the month in which it is due. Crew members with overdue training shall not be used as a required crew member on any passenger missions until the required training is completed.

## 3.14. Recent Experience

To ensure all crew members have the opportunity to exercise their aeronautical skills and thereby maintain the proficiency level to which they have been trained, the following minimum recent experience requirements are established:

3.14.1. Pilots - Recent Experience. Table sets forth the recent pilot flight experience requirements:

Requirement	Pilot In Command	First Pilot	Second Pilot
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	All	In	All In Types Type	All Types Type	In
<b>Previous 90 Days</b>					
Pilot/Copilot Hours	40	10	30	8	20 5
Take Off (Day)	6	3	6	3	6 3
Landings (Day)	6	3	6	3	2 1
Take Off (Night)	3	1	3	1	1 --
Landings (Night)	3	1	3	1	1 --
<b>Previous 6 Months</b>					
Actual/Simulated Inst. Hrs. (3 hours in category)	6	3	6	3	6 3
Approaches	6	3	6	3	6 3

### 3.14.2. Table Notations

3.14.2.1. Requirements under "All Types" are not limited to MMA.

3.14.2.2. Total "Pilot/Co-pilot Hours" may include simulator hours.

3.14.2.3. Instrument hours, approaches, and landings (including night landings) may be accomplished in an approved visual, motion simulator. Approaches should be evenly balanced between precision and nonprecision.

3.14.2.4. Pilots with current qualifications in a program support aircraft that is also FAA-certified for MMA use, but infrequently used for that purpose, may perform the duties of PIC and SIC on that aircraft.

3.14.2.5. At Centers that operate multiple aircraft of higher performance than the MMA, and where such aircraft have annual or semiannual simulator and other similar requirements (night landings, approaches, and hours), pilots shall be considered to have met the recent experience requirements of paragraph 3.14.1.

3.14.3. Flight Maintenance Technician. To maintain currency, flight maintenance technicians must have flown at least three passenger missions each calendar quarter or they shall be accompanied by a current flight maintenance technician.

## 3.15. Overdue Recent Experience

The following requirements apply to pilots overdue the recent experience provisions of paragraph 3.14:

3.15.1. Total Pilot Hours. Aircraft commanders and first pilots who do not meet the 90-day total hour requirements, but are otherwise current, shall increase all instrument approach minimums by 200 feet and 1/2 mile visibility (or the Runway Visual Range equivalent). In no case may the resulting minimums be less than a 400-foot ceiling and 3/4 mile visibility.

3.15.2. Step-down Qualifications. Aircraft commanders and first pilots who are otherwise current but fail to meet the requirements of paragraph 3.14 may revert to first pilot or second pilot status, if they are current in their respective positions, until the "recent experience" provisions for aircraft commander are satisfied.

3.15.3. Multiple Currency. Pilots flying multiple types of aircraft who satisfy "all types" requirements may satisfy the "in type" currency requirement by flying a training flight with a flight instructor or examiner pilot. This training flight

must include a minimum of two instrument approaches, three takeoffs, and three landings.

3.15.4. Night Landing Currency. Pilots not meeting the night-landing currency requirements of paragraph 3.14 shall not conduct night landings with passengers on board, but may be otherwise utilized, until the night-landing requirements are satisfied. Night-landing requirements may be accomplished in an approved visual, motion simulator.

3.15.5. Disqualification. Crew members delinquent in any recent experience requirement, except as modified above, are disqualified for passenger flights. Disqualification up to 3 months requires requalification in items deficient or a proficiency flight check with a flight examiner pilot. Disqualification over 3 months requires retraining in accordance with paragraphs 3.11 and 3.12 and a formal flight evaluation by a flight examiner pilot.

## **3.16. Evaluation Phase**

3.16.1. The intent of the NASA flight crew evaluation program is to objectively evaluate aircrew performance and thereby measure the effectiveness of the training program. Designated flight examiners shall administer all flight checks.

3.16.2. Proficiency. Prior to being designated in their crew position, and annually thereafter, pilots must complete a proficiency evaluation flight conducted by a NASA- or FAA-designated flight examiner pilot. When maintaining qualifications in more than one type of aircraft, a proficiency evaluation flight in each aircraft is required annually. Except for the initial check, proficiency checks may be accomplished in an approved simulator by an FAA-designated examiner. Flight checks are considered overdue if not completed by the end of the month in which they are due. Pilots with overdue proficiency checks shall be scheduled only on training flights (i.e., non-passenger flights) with a qualified examiner or instructor pilot.

3.16.3. Line Checks. Prior to being designated an aircraft commander and annually thereafter, pilots must complete a line evaluation flight conducted by a flight examiner. When maintaining qualification in more than one type MMA, a line evaluation in each aircraft is required annually. The annual line check requirement may be conducted on typical passenger missions, in an FAA-approved simulator, or at an FAA-approved flight school. Pilots with overdue line checks shall not be scheduled as PIC until a check is completed.

3.16.4. Documentation. Flight checks conducted by NASA flight examiners shall be recorded on NASA Form 1615, reviewed by the Chief of Aircraft Operations, and filed in the individual's training file. Normally, all appropriate items indicated on the Form 1615 shall be evaluated during the flight checks. Flight examiners are urged to include meaningful remarks and recommendations on the NASA Form 1615. This shall aid in focusing future training on appropriate areas.

## **3.17. Coordination and Scheduling**

3.17.1. The designated Senior Management official at NASA Headquarters and at NASA Centers, in addition to approving the use of MMA, shall --

3.17.1.1. Ensure that the most cost-effective MMA is used to satisfy approved requirements. Exceptions to this usage shall be documented in writing.

3.17.1.2. Coordinate trip itineraries and requirements with other NASA activities that could benefit from the use of available seats on each trip.

3.17.1.3. Ensure that trip documentation is maintained on file for a period of at least 24 months.

## **3.18. Crew Complement**

3.18.1. General. All personnel scheduled as primary flight crew members on NASA MMA passenger flights shall be trained and qualified in accordance with paragraphs 3.9 through 4.6, inclusive, of this NPG. Crew assignment, including identification of pilot in command, shall be designated in writing for each flight.

3.18.2. Basic Crew. No aircraft carrying passengers shall be operated with less than the minimum basic crew specified below.

Gulfstream G-I, G-III -- Aircraft Commander and Co-pilot and Flight Maintenance Technician

## King Air B-20 -- Aircraft Commander and Co-pilot

## 3.19. Crew Duty Time

3.19.1. Crew duty time is the total time a crew is on duty before the final termination of a flight. Crew duty time accrues consecutively and begins when a crew reports to a designated place of duty to start preparation for a flight and ends when the engines are cut at the end of the flight or series of flights. Crew duty shall normally commence at least 1 hour before scheduled departure time in order to provide adequate time for flight preparation. This does not preclude using personnel as crew members who commenced other duties before reporting for a flight; however, in this case the crew duty time for the entire crew begins when those other duties commenced.

3.19.2. Duty Time Limitations. Basic crew duty time shall not be scheduled to exceed 14 consecutive hours except as set forth below.

3.19.2.1. The Chief of Aircraft Operations may, for a particular flight, extend the basic crew duty time to 16 hours if the total time of crew duty is confined to the period between 4 a.m. and 12 midnight (local time at departure point). The aircraft must be pressurized and have a functional autopilot.

3.19.2.2. Augmented crews should be used only as a last resort when all other options, such as rescheduling or repositioning other crews, are not possible. Consideration should be given to limiting passenger load to ensure that an adequate crew rest capability is available. Augmented crew duty time shall not be scheduled to exceed 20 consecutive hours. The aircraft must be pressurized and have a functional autopilot. Flights requiring augmentation should be documented. The practice of using augmented crews applies to the G-III operation only.

3.19.2.3. Relief crews should be prepositioned if the mission schedule cannot be supported within the duty time limitations specified for a single crew.

## 3.20. Crew Rest

3.20.1. Crew rest is provided to flight crew members in order to rest and eat. It includes crew transportation prior to participating in flight crew duties. Crew rest shall be provided prior to departure from the home station as well as at enroute stops when mission schedule or crew duty limitations prevent the aircraft from returning to the home station.

### 3.20.2. Crew Rest Limitations

3.20.2.1. Crew rest shall normally provide at least 10 consecutive hours free of all official duties.

3.20.2.2. At enroute stops, crew rest shall not normally commence until 1 hour after termination of the mission in order to allow for necessary postflight duties.

3.20.2.3. The crew rest period ends when the crew begins official duties in preparation for departure, normally at least 1 hour prior to scheduled takeoff time.

3.20.2.4. In exceptional circumstances, the Chief of Aircraft Operations may approve a reduced crew rest of no less than 8 hours total ground time, provided this time is confined between the hours of 8 p.m. and 8 a.m. local time. Approvals for reduced crew rest shall be limited to one occurrence per crew member during any 7-day period. Such approvals shall be documented and maintained on file for a period of 12 months.

3.20.2.5. Time accrued by any flight crew member traveling as passenger on an aircraft may not be credited to meet any of the crew rest requirements of this chapter.

## 3.21. Maximum Flight Time Limitations

3.21.1. Flight crew members shall not be scheduled, nor permitted to function as members of NASA flight crews, if their total professional flying time exceeds the following flight hours:

Period	Flight Hours
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Weekly	35 hours
Monthly	100 hours
Quarterly	300 hours
Yearly	1,000 hours

3.21.2. Flight crew members should be scheduled so that flight time is equitably distributed to meet individual training and proficiency requirements.

## 3.22. Hazardous Cargo

Hazardous material as defined in 49 CFR 171.8 shall not be transported in NASA MMA. Cargo to be shipped should be routed through the Center's transportation office before acceptance or, if enroute, cargo should normally only be accepted from a certified shipper or freight forwarding agency. Unaccompanied baggage shall be treated as cargo.

## 3.23. Cockpit Procedures

During all critical flight operations, cockpit activities shall be limited to those involved with the direct operation of the aircraft.

## 3.24. Crew Briefings

Before departure, the PIC shall brief the crew on all essential information concerning the flight including the duties and responsibilities of each flight crew member.

## 3.25. Planning Considerations

3.25.1. Passenger Loading. Normally, all engines and propellers shall be completely stopped when loading and unloading passengers or cargo from MMA. In those instances when, in the determination of the PIC, an extenuating circumstance requires the loading or unloading of passengers or cargo with an engine running, the following minimum precautions shall be followed:

3.25.1.1. Only the engine on the opposite side of the aircraft from the loading door may be operating and shall be operated at as low a power setting as practical.

3.25.1.2. The aircraft shall be parked so that passengers approaching or leaving the aircraft shall not walk in front of, nor behind, a rotating propeller nor in the vicinity of an operating turbo-jet engine.

3.25.1.3. A flight crew member shall be positioned on the ground to ensure that passengers do not approach close to an operating engine.

3.25.2. Passenger Briefings. The PIC shall ensure that all passengers have been briefed on the no smoking policy, use of seat belts, location and operation of appropriate emergency and survival equipment, and operation of doors and exits. This information shall be supplemented by printed passenger information cards. Tape recorded passenger briefings may be used, provided the sound reproduction is of high quality and provided a crew member is present in the cabin during the briefing to answer passenger questions.

3.25.3. Flight Planning. Thorough flight planning is essential to the safe and efficient conduct of mission management passenger flights. A flight plan shall be filed for each flight. Passenger flights shall be operated under instrument flight rules and, to the maximum extent possible, in controlled airspace; however, daylight flights of less than 100 nautical miles may be operated under visual flight rules if weather conditions permit. These flights must utilize radar advisory service to the maximum extent possible.

3.25.4. Fuel Planning. Considering weather forecasts and any known enroute delays, the minimum amount of useable fuel required at takeoff shall be sufficient to --

3.25.4.1. Complete the flight to the destination airport.

3.25.4.2. Fly from that airport to the alternate airport, if required.

3.25.4.3. Fly after that for 1 additional hour using normal cruise consumption at 16,000-feet mean sea level.

3.25.5. Weather Planning. Prior to takeoff, the PIC shall receive a thorough weather briefing concerning current weather and forecasts for the proposed route, destination, and alternate.

3.25.5.1. Departure Weather. Normally weather minimums for takeoff shall be not less than landing minimums appropriate for the aircraft equipment and for the airport facilities. However, if the urgency of the mission requires, as determined by the PIC, a takeoff may be made when the weather is below landing minimums but not less than 1/8 mile visibility or Runway Visual Range (RVR) of 800 feet and provided a suitable departure alternate is available within 100 nautical miles. The weather reported at the departure alternate must be at or above landing minimums and forecast to remain so for at least 2 hours after takeoff.

3.25.5.2. Enroute Weather. MMA shall not file a flight plan requesting clearance into areas of reported or forecast severe icing conditions. Operative airborne radar is required for any flight into areas where current weather reports or forecasts indicate that thunderstorms may reasonably be expected and flight under daylight visual meteorological conditions is not possible. Whenever possible, all flights shall be planned to circumnavigate areas of thunderstorm activity.

3.25.5.3. Destination Weather. MMA may file for a destination that forecasts prevailing visibility equal to or greater than published landing minimums appropriate to the aircraft equipment, but not less than 1/2 mile or RVR 1800 feet for time of arrival. If the destination weather is reported and forecast to be less than 2000-foot ceiling or less than 3-mile visibility from 1 hour before until 1 hour after the estimated time of arrival (ETA), an alternate airport shall be listed on the flight plan. Airport weather minimums shall meet or exceed the requirements of FAR Part 91.

3.25.5.4. New Aircraft Commanders. When the pilot has less than 100 hours PIC experience in the type (make and Model) aircraft being operated, the minimum descent altitude (MDA) or the decision height (DH) and visibility landing minimums are increased by 200 feet and 1/2 mile (or the RVR equivalent) for all instrument approaches conducted by that pilot. In no case may the landing minimums be less than 400-foot ceiling and 3/4-mile visibility. Similarly, takeoffs shall not be made if the airfield is below these adjusted landing minimums.

3.25.6. Preflight Inspections. Before each flight, the PIC shall ensure that the aircraft is in an airworthy condition. Required inspections should be accomplished and documented as soon as practical after reporting to operations.

3.25.6.1. Aircraft Logs. Prior to activating any aircraft system, NASA Form 1257, NASA Aircraft Log, and NASA Form 1260, MMA Delayed Discrepancy Form, shall be reviewed and evaluated. Prior to flight, the PIC shall accept the aircraft by signing NASA Form 1257. DoD aircraft forms or equivalent forms may be used as a substitute for the appropriate NASA forms.

3.25.6.2. Aircraft Visual Inspection. The aircraft visual external and internal preflight inspections shall be accomplished in accordance with the aircraft flight manual. At intermediate stops, as a minimum, an abbreviated walkaround inspection shall be conducted after each arrival and before each departure.

3.25.7. Aircraft Loading. The PIC shall ensure that the aircraft is limited to the maximum gross weight, zero fuel weight, maximum landing weight, and the center of gravity limits specified in the appropriate aircraft flight manual.

3.25.7.1. Weight and Balance Data. A copy of the current weight and balance data shall be carried aboard each MMA. It shall be used to determine that the weight and center of gravity shall remain within limits for the duration of each flight.

## 3.26. Takeoff and Departure Procedures

3.26.1. Use of Navigational Aids (NAVAIDS) and Electronic Equipment. All available NAVAIDS shall be used from departure to landing. On departure, NAVAIDS shall be set up to aid in a possible expedited emergency return as well as to aid in establishing the initial enroute course.

3.26.1.1. Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). If installed and operative, the CVR and FDR shall be turned on during the entire flight.

3.26.1.2. Ground Proximity Warning System (GPWS). The GPWS shall be used on all flights. If the equipment tests satisfactorily prior to takeoff, it shall be assumed that any GPWS warning is valid unless the aircraft position can immediately and positively be verified by visual reference. Immediate and appropriate action shall be taken to all valid

GPWS warning calls.

3.26.1.3. Landing Lights. Maximum use of landing lights is encouraged during all takeoffs and landings and when operating near airports or in high-density traffic areas.

3.26.2. Outside Vigilance. The PIC is responsible for ensuring that, during visual conditions, at least one person maintains a lookout for conflicting traffic at all times. Unnecessary paperwork shall not be accomplished in the cockpit during aircraft climbs or descents.

3.26.2.1. Use of Autopilot. To aid in outside vigilance during flight in visual conditions, maximum use of the flight director system, coupled to the autopilot, is encouraged. However, on takeoff, the autopilot shall not be engaged at less than 500 feet above the terrain.

3.26.2.2. Outside Observer. Use of any additional crew members to aid in outside vigilance is highly encouraged, particularly while operating in visual conditions in heavy traffic areas. Flight maintenance technicians shall normally remain at their duty station throughout the climb and descent. Their cabin duties shall be considered secondary in importance during these times.

## 3.27. Enroute Procedures

3.27.1. Crew members at Station. Both pilot and copilot must remain at their duty stations with seat belts fastened while the aircraft is taxiing, taking off, landing, and while enroute unless absence is necessary for the performance of their duties or in connection with physiological needs.

3.27.2. Passenger Considerations. The PIC is responsible for the safety and comfort of the passengers and should make every reasonable effort to keep the senior passenger or trip coordinator apprised of any significant deviations from the itinerary or schedule. In-flight delays and readily discernible abnormal conditions should be explained to the passengers.

3.27.2.1. Safety Belts. The PIC shall ensure that all passengers and crew members have safety belts securely fastened for taxiing, takeoffs, landings, and before entering an area of in-flight turbulence.

3.27.2.2. Admission To The Flight Deck. Passengers shall not be admitted to the flight deck during the taxi, takeoff, climb, descent, and landing phase of flight. However, at other times, at the discretion of the PIC, visits to the flight deck by NASA passengers should be encouraged.

3.27.3. In-Flight Meals. Food requiring cooking shall not be prepared in-flight aboard MMA. Food for passengers and crew normally shall be purchased from a commercial, NASA, or military food service facility.

3.27.4. Flight Progress. The PIC shall ensure that the aircraft's progress is continually monitored. This includes the progressive following of the aircraft's positions, fuel consumption, and the updating of enroute, destination, and alternate weather.

3.27.5. Minimum Fuel. The PIC shall notify ATC of the aircraft "minimum fuel" status at any time the fuel supply has reached a quantity where, upon reaching destination, little or no delay can be accepted. In no case may this quantity be less than that specified in paragraph 3.30.4. If fuel remaining indicates a need for traffic priority to ensure a safe landing, the PIC shall formally declare an emergency due to low fuel and shall report fuel remaining in minutes.

3.27.6. Emergency Procedures. When an emergency or in-flight difficulty arises, the PIC shall complete the appropriate checklists and report the nature and extent of the difficulty, intentions, assistance required to the controlling ground agency. In the event of an engine failure or shut down, the PIC shall land at the nearest suitable airport at which a safe landing can be made.

## 3.28. Arrival, Approach, and Landing Procedures

3.28.1. General. During instrument arrivals, all available navigational aids shall be used. When available, precision approach guidance (Instrument Landing System or Precision Approach Radar) shall be used for all night arrivals except training flights.

3.28.2. Weather Minimums. No pilot operating an aircraft may land that aircraft when the flight visibility is less than the visibility prescribed in the standard instrument approach procedure being used.

3.28.3. Destination Below Minimum. If the destination weather is marginal or below minimums, the PIC may proceed

to a suitable alternate or may hold if the destination weather is forecast to improve and fuel for alternate and reserve requirements shall not be compromised. The weather at the alternate must be at or above alternate minimums and forecast to remain so until the new ETA plus 1 hour.

3.28.4. Approach Briefing. Before starting an approach, the pilot flying shall brief the crew on the procedures to be followed during the approach and landing and in the event of a missed approach. The briefing shall include a review of the procedure to be flown, including key altitudes and restrictions as well as specific crew duties during the approach and landing.

3.28.5. Approach Progress. The pilot making the approach shall announce his/her progress and intentions periodically. The pilot not flying shall monitor the approach and provide a continual cross-check of the navigational aids, instruments, air traffic control instructions, and approach procedures. Any deviations from the prescribed procedure shall immediately be brought to the attention of the pilot flying. The pilot not flying shall call out, "1000 feet above," and "100 feet above," all key altitudes as well as "minimums" upon reaching the appropriate Minimum Descent Altitude (MDA) or Decision Height (DH). When the runway is in sight, the pilot not flying shall state, "runway in sight." If the runway is not in sight when the aircraft reaches the missed approach point, the pilot not flying shall state, "go around."

3.28.6. Use of Autopilot. Use of the autopilot during arrivals, descents, and approaches is encouraged particularly during visual flight conditions as an aid in collision avoidance. In order to prevent excessive loss of altitude in the event of an autopilot failure, the pilot directing the aircraft shall maintain light control contact throughout the final portion of an automatic coupler approach. Full manual control shall be assumed at or above published minimum altitude.

3.28.7. Canceling Instrument Flight Plans. Normally, instrument flight plans shall not be canceled prior to landing.

## 3.29. Postflight Procedures

3.29.1. Closing Flight Plan. On completion of the flight, the PIC shall ensure the flight plan is closed with the appropriate facility.

3.29.2. Aircraft Security. The PIC must take prudent measures to secure and protect the aircraft at enroute stops. These measures must preclude unnecessary exposure to weather, such as high winds and freezing precipitation, and must also provide a reasonable degree of security from such activities as vandalism, theft, or terrorism. At any time the aircraft is unattended by a member of the crew during enroute stops, it shall be locked. At overnight stops, instructions for locating the crew should be left with the fixed base operator, base operations, or other airport authority.

3.29.3. Aircraft Flight Logs. The PIC shall enter, or have entered, in the aircraft flight log each mechanical irregularity discovered during the flight. All unusual events (e.g., overweight or hard landings, lightning or bird strike, static discharge, and flight through hail or severe turbulence) shall be recorded in the aircraft log.

## 3.30. Specific Operational Restrictions

3.30.1. Appropriate aircraft flight manual data shall be utilized to assure adequate takeoff, climb, approach, and landing performance is available for the actual conditions to be encountered. Additional restrictions, as outlined in the tables below, are established to assure a prudent level of safety during routine line operations.

3.30.2 Following are the minimum runway lengths to be used for the aircraft shown in the table.

### Minimum Runway Length

<u>Aircraft</u>	<u>Runway</u>
King Air B200	3500 ft.
Gulfstream I	4000 ft.
Gulfstream II/III	6000 ft.

3.30.3. Wind Restrictions. For normal operations, airfields shall be considered below minimums for takeoff and landing when winds, including gusts, are greater than those established below:

## Wind Restrictions

<b>Aircraft</b>	<b>Maximum Component</b>	<b>Tailwind Component *</b>	<b>Crosswind</b>
King Air B200	45 kts	10 kts	20 kts
Gulfstream -I	45 kts	10 kts	20 kts
Gulfstream-III	40 kts	10 kts	20 kts
		* On wet runways, maximum tailwind component is 1/2 the value shown	

3.30.4. Minimum Fuel For Landing. Minimum fuel for landing is established in recognition of three factors: (1) fuel required to execute an unanticipated go-around and traffic pattern; (2) Fuel required for landing, rollout; and (3) allowance for fuel quantity measuring system error. All flights shall be planned so as to have no less than the following minimum indicated fuel available at touchdown on the final landing:

## Minimum Landing Fuel

<b>Aircraft</b>	<b>Minimum Landing Fuel</b>
King Air B200	400 pounds
Gulfstream-I	1000 pounds
Gulfstream-III	2500 pounds

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## CHAPTER 4: Airworthiness and Safety/Flight Readiness Review Policy

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### 4.1. Purpose

This chapter establishes guidelines to ensure the airworthiness and appropriate maintenance of NASA aircraft. It also establishes guidelines for safety and flight readiness reviews performed in conjunction with the acceptance or modification of aircraft.

### 4.2. Airworthiness Guidelines

4.2.1. NASA aircraft will be operated in an airworthy condition as certified by a formal review board and under the authority of either a NASA Airworthiness Certificate or an FAA Certificate of Airworthiness. Mission Management Aircraft will be operated in compliance with FAR Part 91 and maintained and inspected in accordance with FAR Parts 21, 39, 43, and 91 by technicians certified under FAR Part 65. These requirements may be satisfied by existing Center processes that satisfy risk management requirements.

4.2.2. Airworthiness and safety/flight readiness reviews will be conducted for all significant aircraft modifications and to establish procedures to conduct flight operations. The purpose of these reviews shall be to minimize risk to persons and property and to enhance the likelihood of mission and program success. Formal review requirements will be commensurate with the significance of the mission/project and the risk involved.

### 4.3. Airworthiness Responsibilities

4.3.1. The Enterprise Associate Administrators will establish, review, and approve programmatic requirements.

4.3.2. The Associate Administrator, Office of Safety and Mission Assurance will formulate NASA safety policy and provide independent oversight of NASA aviation safety and safety guidelines.

4.3.3. The Center Directors will establish airworthiness and safety/flight readiness review procedures to manage the risks associated with flight programs, to ensure safe aircraft operations, and to ensure that flight objectives satisfy programmatic requirements. The Center Directors will ensure that these procedures are incorporated into the contracts of those who operate and maintain NASA-controlled aircraft.

4.3.4. The Aircraft Management Team (AMT) will work with the IAOP and its subpanels to establish Agencywide airworthiness review and standard operating procedures for mission management aircraft.

### 4.4. Airworthiness and Safety/Flight Readiness Reviews

4.4.1. Center Directors will establish procedures to ensure that airworthiness and safety reviews are conducted for aircraft operations or missions, as applicable, as well as procedures to ensure the conduct and documentation of formal airworthiness and safety/flight readiness reviews of significant aircraft modifications and flight programs. Uniformity of procedures is neither appropriate nor required in view of the diverse nature of aircraft operations within NASA. The following fundamental elements and functions are an integral part of NASA aircraft airworthiness and safety/flight readiness review programs. Those that are appropriate should be included in policies and procedures that cover flight or flight-test operations.

4.4.2 The purpose of these reviews is to ensure that risks have been adequately managed to enhance the likelihood of mission and program success, to ensure adequate justification for all missions or operations, and to minimize the risks

to persons or property.

4.4.3 The detail addressed by the flight readiness reviews will be dependent on the risk assessment associated with the aircraft, the mission, or the project requirements, and should be organized accordingly.

4.4.4. Flight programs will be reviewed as early in the development cycle as possible and will identify the need and schedule for additional safety related resources, procedures, or reviews.

4.4.5. Procedures will be established to ensure that after modifications are completed, configuration changes are properly documented to ensure that accurate aircraft inventories are recorded in order to comply with property management and weight-and-balance documentation requirements.

## 4.5. Airworthiness and Maintenance Programs

NASA aircraft will be maintained in accordance with an established and documented airworthiness program, using standards of quality in workmanship, materials, and support equipment that will ensure safety of flight.

4.5.1. All NASA aircraft, aircraft supporting NASA, and aircraft using NASA flight crews will be maintained under an approved airworthiness program using standards of quality in materials, workmanship, and supporting ground equipment that comply with the FAA-approved OEM standards, DoD technical standards, or NASA standards, as required. NASA aircraft maintenance and quality assurance inspection programs should address, as a minimum, the following activities:

4.5.1.1. Calendar, depot, periodic, phase, preflight and postflight inspections, and provisions for inspection and certification procedures of specific maintenance actions.

4.5.1.2. Determination of the serviceability, authenticity, traceability, and airworthiness of parts, components, accessories, and assemblies by subjecting them to inspections, tests, or operational checks.

4.5.1.3. Configuration control process to ensure compliance with applicable airworthiness, service and safety bulletins, or other pertinent directives, such as those from FAA, DoD, and OEM. The process should allow for documentation of alternate procedures or inspections if they were substituted.

4.5.1.4. Program for trend analysis and investigation of recurring discrepancies, high-failure rate components, and high-usage materials.

4.5.1.5. Documentation consisting of aircraft logs and records, accessory change records, weight and balance records, and aircraft property accountability records, as well as that documentation required by NPG 4100.x, NASA Materials Inventory Management Manual.

## 4.6. Quality Assurance

4.6.1. NASA Quality Systems shall conform to the International Organization for Standardization (ISO) 9000. A comprehensive aircraft quality assurance program will be established at each NASA Center that is responsible for the maintenance of mission management aircraft.

4.6.2. The Chief of Aircraft Operations is responsible for ensuring that Quality Assurance Inspectors and other personnel are trained, qualified, and assigned to implement a comprehensive quality assurance program appropriate for Center aircraft operations.

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## CHAPTER 5: Aviation Safety

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### 5.1. Guidelines

5.1.1. NASA will take all necessary steps to avoid loss of life, property, and injury to personnel, as well as prevent mission or test failures. Accordingly, Center Directors will support and maintain a well-defined aviation safety program and organization in accordance with established guidelines. The aviation safety program should be formalized and implemented by safety professionals, who should provide timely monitoring, surveillance, and support. The safety program should address requirements of the aviation ground environment as well as the flight environment.

5.1.2. Aviation safety is a line management responsibility. Consequently, managers at all levels have a direct responsibility for the safe conduct of aircraft operations under their control. All aviation safety-related contracts should be written to ensure compliance with these guidelines.

5.1.3. Mishap prevention in NASA is based upon the philosophy that mishaps can be prevented and that mishap prevention is an inherent function of leadership and management. NASA's major involvement in aeronautics dictates a major involvement in aviation safety, not only by the establishment of a formal aviation safety program, but also through day-to-day application of safe practices and procedures in its research and technology programs.

### 5.2. Aviation Safety Responsibilities

5.2.1. To ensure effective implementation, an aviation safety program should be applicable Agencywide and conform to each organization's aviation management structure. To clarify the program, the NASA aviation management structure and safety responsibilities and functions are outlined below.

5.2.2. The Associate Administrator, Office of Safety and Mission Assurance, establishes aviation safety program requirements, and provides independent oversight of NASA aviation safety. The Associate Administrator shall provide the NASA Administrator with an independent assessment of NASA's aviation safety status and immediate information on critical safety issues.

5.2.3. The Director, Safety and Risk Management Division, is the Headquarters focal point for aviation safety oversight. The Director is responsible to the Associate Administrator, Office of Safety and Mission Assurance, for establishing aviation safety policy and ensuring its implementation through verification of effective aviation safety programs throughout the Agency where aviation assets are deployed. In addition to other duties such as attending meetings, reviews, and other forums relating to aviation safety, as well as providing for adequate mishap reporting and analysis, the Director's primary duties relating to aviation are to provide systems safety oversight to ensure that Center aircraft operations comply with NASA safety policy and to coordinate with the Aircraft Management Team (AMT) on Office of Safety and Mission Assurance requirements affecting aviation safety and reporting.

5.2.4. The Associate Administrator, Office of Management Systems and Facilities, in accordance with NPD 7900.4, is responsible for Agency policies and other matters related to NASA aircraft management. The Associate Administrator will provide direction to the AMT regarding its coordinating role with NASA Centers and the IAOP.

5.2.5. The Lead, AMT, is responsible for coordinating the development of an Agency aviation safety program in accordance with Agency policies. The Director is responsible for providing aviation safety policy, guidance, and oversight. In addition to attending meetings, reviews, and other forums related to aviation safety, the Director's primary duties in this area are to establish NASA aviation safety policy guidelines for research and development, program support, and mission management aircraft operations and to assess Center aviation safety programs for compliance with NASA's aviation safety policy. The AMT may also participate in selected aircraft mishap investigations.

5.2.6. The Enterprise Associate Administrators who operate and maintain aircraft assets have management responsibility for aviation safety and will ensure implementation of aviation safety programs for their respective

Centers. This responsibility applies to allocation of aviation resources to safely meet objectives and program goals, to encourage and promulgate safety awareness, to conduct mishap investigations, and to develop corrective actions.

5.2.6.1. A senior, single point of contact for aviation safety and aircraft operations management shall be designated within each Enterprise to provide a focus with the Office of Safety and Mission Assurance and the Office of Management Systems and Facilities for all aviation safety and aircraft related matters.

5.2.6.2. The Associate Administrator, Office of Aero-Space Technology manages aviation safety-related research and technology programs.

5.2.7. The Aerospace Safety Advisory Panel (ASAP) was established as an advisory committee to NASA by 42 U.S.C. 2477, Section 6 of the NASA Authorization Act, 1968, as amended. The Panel's charter is to review and evaluate program activities, systems, procedures, and management policies and provide assessments of those areas to NASA management and to Congress. The panel provides independent advice on NASA aviation safety-related issues to the Associate Administrator, Office of Safety and Mission Assurance and to the Administrator.

5.2.8. Center Directors are the primary NASA officials responsible for ensuring the safe operation of all aircraft assigned to the Center and for establishing and implementing an aviation safety program. The Director is responsible for determining airworthiness and flight readiness review requirements, establishing operating procedures, and for ensuring that the flight objectives satisfy programmatic requirements.

5.2.9. Center Flight Operations Managers are the managers of the aviation departments or organizations at the Centers and are the senior line personnel assigned aircraft operations responsibilities. The manager depends on the Aviation Safety Officer (ASO) to identify mishap potentials and assist in administering the mishap prevention program. The manager may not delegate the line responsibility for the prevention of mishaps. A manager's experience, leadership, and philosophy are decisive factors in ensuring safe operations.

#### 5.2.10. Pilot-in-Command

5.2.10.1 The NASA aircraft PIC is responsible at all times for the safe operation of the aircraft and the safety of the passengers and shall be the final authority as to whether a flight shall occur. In addition, the PIC is the final authority as to whether a flight shall be delayed or diverted for reasons of weather, aircraft conditions, or other safety-related considerations.

5.2.10.2 The PIC shall ensure that passenger briefings are conducted and that they include pertinent egress, safety, and emergency information.

5.2.11. All aviation supervisory personnel will ensure that their aviation activities include adequate safety provisions and include the development of aviation safety enhancement techniques, standards, and procedures.

5.2.12. Each NASA employee will report potential or actual aircraft operations-related hazards to the ASO, who is responsible for prompt notification of safety issues to the appropriate designated official.

5.2.13. All personnel, including contract personnel associated with NASA flight operations, shall conduct aviation-related activities in a safe and responsible manner and in compliance with NASA aviation guidelines and safety programs. Contracts involving or affecting aviation operations shall include requirements to comply with aviation safety requirements. Aviation safety is the personal responsibility of every person involved in aviation-related activities.

## 5.3. Aviation Safety Officer (ASO)

5.3.1. An ASO will be appointed at each appropriate Center by the Center Director or designee. However, the ASO is authorized to take a safety issue to a higher level of management. If possible, the ASO position should be a full-time responsibility. Since the ASO serves as the manager's focal point for aviation safety matters, the ASO should report directly to the senior aviation manager responsible for risk management. The ASO also acts on behalf of the Center Director when discharging this responsibility. The ASO shall promote aviation safety measures and use all resources available to promote mishap prevention. The ASO will be on flight status and be current in assigned aircraft.

5.3.2. The ASO will have a sufficiently adequate background in aviation and familiarity with the Center and its aviation programs in order to implement and promote an effective safety program.

5.3.3. The ASO should attend a recognized aviation safety officer's or accident-prevention course of at least 2 weeks' duration and should establish a continuing education program to ensure adequate knowledge to discharge the duties of

the office.

## 5.4. Aviation Safety Program

5.4.1. Each level of aviation management is responsible for the aviation safety program. The Director or Aviation Manager responsible for aviation safety and risk management at each level is assisted by a safety advisor who is an integral part of the manager's staff. The program is supported by other safety personnel as required. Reviews and staff visits by the AMT and by Headquarters safety personnel provide oversight and monitoring of management's effectiveness in aviation safety and technical and operational assistance for improving the overall safety programs.

5.4.2. The highly diversified aviation activities within NASA require a tailored aviation safety program for each flight activity. Although aviation safety is everyone's business, the primary responsibility for each Center's aviation safety program rests firmly with the Center Director.

5.4.3. Each Center will establish a documented aviation safety program. Information on aviation safety will be contained in the ASO Handbook. In the interim, Center aviation safety programs will, as a minimum, address the following areas:

5.4.3.1. Risk assessment and hazard analysis.

5.4.3.2. Mishap and near midair collision reporting and investigation.

5.4.3.3. Project and program safety plans.

5.4.3.4. Design reviews, aircraft configuration management, and flight and test readiness reviews.

5.4.3.5. Training, education, and awareness.

5.4.3.6. Aviation safety inspections and surveys.

5.4.3.7. Hazard reporting and investigation.

## 5.5. Interfaces with Other Agencies

5.5.1. NASA aviation activities interface with the aircraft industry, Department of Transportation (DOT), FAA, DoD, and foreign governments. Those entities possess unique resources that should be used whenever possible to enhance the NASA aviation safety program.

5.5.2. Industry. Special aviation safety provisions contained in contracts should permit or require exchange of accident information concerning the types of aircraft involved. NASA safety personnel should participate in design reviews and inspections during the acquisition phase of aircraft and other aviation equipment.

5.5.3. Department of Transportation. NASA aviation safety has a direct interest in FAA flight services and facilities used by NASA aircraft. These include air traffic procedures, enroute, restricted, and unrestricted airspace, and local flying and training areas. Cooperation with FAA should continue to enhance a mutual understanding in developing safe aviation procedures. Research and development activities present a unique opportunity for NASA and FAA cooperation to enhance safety.

5.5.4. Department of Defense. NASA utilizes many military airfields and aircraft common to all military services; therefore, coordination with those services is required. Use of the various U.S. Air Force, Army, and Navy safety publications, mutual exchange of accident prevention data, and participation in joint safety efforts can continue to provide mutual benefits. Safety and accident investigation provisions should be included in joint agreements with DoD agencies for joint use or loan of aircraft.

5.5.5. Foreign Governments. Because of the diversity and worldwide scope of NASA aviation operations, communication between NASA aviation personnel and the international aviation community is encouraged. Much can be learned from experiences garnered from these international sources. Aviation safety is focused on saving lives and property and does not have political or national boundaries.

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## CHAPTER 6: NASA Intercenter Aircraft Operations Panel

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### 6.1. Purpose

This chapter renews the charter for the NASA Intercenter Aircraft Operations Panel (IAOP), as previously authorized by NPR 1152.47 (canceled), and sets forth the panel's functions and membership.

### 6.2. Role

The NASA IAOP was originally established on August 9, 1978. Its chairperson reports to the Assistant Administrator for Institutional and Corporate Management. The Panel is chartered in the public interest to assist NASA Senior Management in all aspects of aircraft operations. Additionally, it monitors and reviews NASA aviation activities, emphasizing the efficient use of related resources and operational aviation safety.

### 6.3. Functions

The NASA IAOP will accomplish the following:

6.3.1. Provide counsel and recommendations to the Assistant Administrator for Institutional and Corporate Management and other NASA Senior Management officials concerning Agency policies and other matters related to NASA aircraft.

6.3.2. Conduct periodic meetings to review with and advise the Aircraft Management Team concerning uniform policies and procedures related to the following matters:

6.3.2.1. Aircraft operations, guidelines, and requirements.

6.3.2.2. Flight crew standards, training, and proficiency.

6.3.2.3. Aviation safety.

6.3.2.4. Aviation medical requirements.

6.3.2.5. Airworthiness, maintenance, and quality assurance.

6.3.2.6. Aircraft flight readiness reviews/hazard analysis.

6.3.2.7. Facilities requirements.

6.3.2.8. Resources requirements, utilization, and planning.

6.3.2.9. Aircraft acquisitions, dispositions, and categorization criteria.

6.3.2.10. Passenger operations/additional crewmembers.

6.3.2.11. Uniform reporting system.

6.3.3. Review and recommend procedures and methods for effective intercenter aircraft operations, including the following:

6.3.3.1. The interchange of pilots and flight activities of mutual interest between or among Centers.

6.3.3.2. The provision of information to NASA management about active and planned aircraft program activities,

including, as required, briefings of the various missions and modes of operations existing at the Centers.

6.3.4. Participate in and monitor functional reviews of aircraft operations at the various Centers. The review teams will, for Center review purposes, function independently of Center management.

6.3.5. Conduct reviews of a special nature at the request of the Assistant Administrator for Institutional and Corporate Management.

6.3.6. Coordinate findings dealing with institutional management issues with the appropriate Institutional Associate Administrator prior to publication.

## 6.4. Subpanels and Committees

The Chairperson of the Panel is authorized to designate such subpanels and temporary committees as are necessary to carry out the functions of the Panel.

## 6.5. Meetings

Meetings will be held at the call of or as prescribed by the Chairperson, but at least two times per year.

## 6.6. Membership

The Panel is composed of NASA aircraft operations representatives from the Centers that operate NASA aircraft. The panel may invite advisors and other personnel, as necessary, to accomplish its review and oversight function. The Chairperson will be designated by the Assistant Administrator for Institutional and Corporate Management for a term of 2 years. Membership is as follows:

### 6.6.1. Members

ARC Chief, Airborne Science and Flight Research Division  
DFRC Chief, Flight Operations Division  
GSFC/WFF Chief, Aircraft Office  
JSC Chief, Aircraft Operations Division  
KSC Chief, Aircraft Operations Office  
LaRC Chief, Flight Operations and Support Division  
GRC Chief, Aircraft Operations Branch  
MSFC Manager, Air Operations  
SSC Aircraft Operations Representative  
HQ/J Manager, Mission Management Aircraft (Executive Secretary)  
HQ/J Manager, Research and Development/Program Support Aircraft

### 6.6.2 Advisors

ARC Chief, Flight Operations  
JSC Flight Crew Operations Directorate Representative  
HQ/Q Manager, Flight Safety  
HQ/U Director, Aerospace Medicine Division

### 6.6.3. Program Office Observers

HQ/M Manager, Space Shuttle HQ Office  
HQ/R Director, Research and Technology  
HQ/S Deputy Associate Administrator  
HQ/U Director, Microgravity Research Division  
HQ/Y Director, Program Integration Division  
HQ/Y Director, Research Division

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# CHAPTER 7: Intercenter Aircraft Operations Review Program

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## 7.1. Purpose

The NASA intercenter aircraft operations review program provides an objective management evaluation of the procedures and practices that are being used at the operating Centers to ensure safe and efficient accomplishment of assigned missions and goals. In addition to providing Center Directors and Headquarters management officials with an overview of the general health of all aspects of aircraft operations, the review teams also identify deficiencies in, or deviations from, NASA-wide policies, procedures, and guidelines. Results of the reviews will be used to update NASA-wide or local directives, as appropriate, in order to enhance standardization and improve productivity. The evaluations are conducted primarily by intercenter team members and, thus, are a valuable method of communicating current information among Center aircraft operations personnel (See Appendix B for the review sheet and Appendix C for the review plan.).

## 7.2. Responsibilities

The review program is an important IAOP function. The IAOP will establish intercenter review teams to periodically review all aspects of aircraft operations at NASA Centers, including the implementation of Center procedures. The Centers and appropriate Headquarters offices (e.g., AMT, Aviation Safety) will provide personnel to serve on the teams. The AMT will coordinate the review program.

## 7.3. Procedures

In conducting reviews, the following guidelines will be used:

7.3.1. The review team will be composed of a team leader who is a member of the IAOP and four or five team members selected from various Centers to provide expertise in the areas of operations, maintenance, quality assurance, avionics, and aviation safety. The mix of Center members will vary for each review. The AMT will provide a member for each review who will be responsible for analyzing management practices and special interest items. In addition, the Office of Safety and Mission Assurance will provide a member for each review who will be responsible for aviation safety compliance. The Aerospace Safety Advisory Panel may send an observer to each review. The AMT will maintain a current review schedule.

7.3.2. A letter will be written to the appropriate Center Director and cognizant Headquarters Program Office listing the scope and time of the review and requesting a briefing on the Center's aircraft operations program. This letter is the responsibility of the AMT.

7.3.3. Depending on the level of flight activity at a Center, the reviews should be completed within a period of 2 to 4 days. The team leader will ensure that sufficient time is spent at the site for a thorough review.

7.3.4. All reviews will begin with a team entrance briefing and conclude with an exit debriefing between the review team and the Center Director or his designee. The team leader should introduce the team members and explain the scope and purpose of the review at the entrance briefing.

7.3.5. The entrance briefing given by the Center to the review team should be comprehensive. Local operations and maintenance documents should be made available to the team, and the team members should familiarize themselves with the documents before performing field work.

7.3.6. Standards for the review will continue to be those that ensure compliance with established instructions. They

include FAA, DoD, manufacturer, industry, and association standards as applicable to NASA aircraft operations.

7.3.7. Review checklists will be made available to each review team member to use as a guideline to ensure compliance with applicable instructions. Team members should discuss findings and recommendations with the affected Center party to ensure mutual understanding of the observations. Minor discrepancy items should be brought to the attention of the first-line supervisor for immediate corrective action. The team leader should hold daily team progress meetings to discuss discrepancies and possible recommendations.

7.3.8. The team leader's exit briefing should be in sufficient detail to inform Center management of the status of local aircraft operations activities with particular emphasis on significant findings and recommendations requiring management attention.

7.3.9. Reviews will be documented in a brief report that focuses on significant findings and recommendations. The review report should address those items that require Senior Management attention and also should identify those activities that are being performed in an outstanding manner. Criticality criteria will be used to assist management in prioritizing responses as follows: Required Action, Recommendation, and Commendable Finding. Required Actions will cite the specific rule that is not in compliance. The report will be forwarded by the review team leader to the cognizant Program Office. Copies will be sent to the cognizant Center Director, appropriate Headquarters offices, IAOP members, and members of the review team.

7.3.10. The Center Director will be responsible for responding to the appropriate Enterprise Associate Administrator concerning corrective actions. The Enterprise Associate Administrator will review the response and forward it to the AMT. The AMT and appropriate IAOP review team leader will review the response for adequacy, followup as necessary, track recommendation responses, and close out the report.

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# Appendix A. Aviation Medical Program Certification for NASA Pilots

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## A.1. Purpose

This appendix establishes requirements and procedures for medical certification of NASA aircraft pilots. It is applicable to NASA Headquarters and Centers, including Component Facilities and applies to both civil service and contractor pilots flying NASA research and development, program support, and mission management aircraft; it does not apply to space flight, nor to astronaut pilots.

## A.2. Guidelines

2.1. The Occupational Health Clinic physician indicates successful medical certification to the Center Director and respective flight manager who determine flight status for pilots flying NASA aircraft.

2.2. Pilot medical examinations will include either an FAA Class I, military pilot flight physical, or NASA flight medical certification as a base requirement. The certification will be renewed annually.

2.3. Examinations conducted by non-NASA Aircrew Medical Examiners (AME) will require a records review by a NASA Occupational Health Clinic physician prior to recommendation to the Center Director. This requirement includes the signing of formal permission for release of medical records.

## A.3. Review Boards

3.1. An Aerospace Flight Medical Certification Review Board will be established at the Agency level. Membership will include the Director, Occupational Health and Aerospace Medicine Office; a NASA flight surgeon; an external flight surgeon; the Lead, Aircraft Management Team; a representative of the Intercenter Aircraft Operations Panel; and a representative of the appropriate Center.

3.2. Aerospace Flight Medical Certification Review Boards may be established at the individual Centers, membership to be determined by each Center.

## A.4. Waivers

4.1. Military and NASA pilot certifying examinations that do not require waivers, as well as those requiring only routine limitations (e.g., for eyeglasses), will be forwarded by the Center Occupational Health Clinic directly to the Center Director and flight manager. FAA examinations that do not require waivers will be forwarded by the Center Occupational Health Clinic to the FAA for basic certification by the Center Director and flight manager.

4.2. Those examinations that require a waiver for FAA certification will be reviewed by the Center and/or Agency Aerospace Flight Medical Certification Review Board prior to submission to the FAA. When in agreement, the review board will forward supporting documentation to the FAA, with NASA's recommendation for approval. Those military and NASA examinations which require a waiver will be reviewed by the Center and/or Agency Aerospace Flight Medical Certification Review Board for approval.

4.3. Denial of waiver by the Center review board may be appealed to the Agency review board for final review. Decisions by either flight medical certification review board may also, in unusual cases, be appealed directly to the Center Director.

## **A.5. Examiner Qualifications**

An Occupational Health Clinic physician, performing NASA flight certification examinations, will require prior approval by the FAA as a designated aviation medical examiner. The physician will also be required to participate in periodic flight surgeon training programs presented by the NASA Occupational Health and Aerospace Medicine Office.

## **A.6. Responsibilities**

6.1. The Associate Administrator for Life and Microgravity Sciences and Applications is responsible for the overall NASA Occupational Health Program, including development of NASA pilot medical certification examination procedures.

6.2. The Program Associate Administrators have responsibility for ensuring that their Centers comply with occupational health policy as detailed in this NPR and related documents.

6.3. The Center Directors and the Assistant Administrator for Institutional and Corporate Management have the responsibility for implementation of this NPR at their respective Centers. Center Directors also will determine the desirability of maintaining occupational health pilot certification capability at their individual Centers. As an alternative, they may wish to utilize existing capabilities at other Centers.

## **A.7. Authority**

7.1. OMB Circular A-72.

7.2. Public Law 91-596, Occupational Safety and Health Act of 1970, as amended.

7.3. Executive Order 12196, Occupational Safety and Health Programs for Federal Employees.

7.4. Public Law 79-658, 5 U.S.C. 7901.

7.5. 31 U.S.C. 483a.

7.6. FPM Chapter 792, Federal Employees Occupational Health Programs.

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## Appendix B. NASA Intercenter Aircraft Operations Review Sheet

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FACILITY:

DATE: \_\_\_\_\_

AREA REVIEWED: MANAGEMENT \_\_\_\_\_ OPERATIONS \_\_\_\_\_ SAFETY \_\_\_\_\_

AVIONICS \_\_\_\_\_ QA \_\_\_\_\_ MAINTENANCE \_\_\_\_\_ FACILITIES \_\_\_\_\_

TEAM MEMBER:

LOCAL CONTACT:

OBSERVATION TITLE:

OBSERVATION (Factual Information):

REQUIRED ACTION, RECOMMENDATION, OR COMMENDABLE FINDING:

## Appendix C. Intercenter Aircraft Operations Review Plan

Action Item	Responsible Party	Timing
Update schedule, Designate Team Leaders, and assign intercenter team members.	IAOP Chairman/AMT	Yearly, amended as required.
Notify team members, request travel orders.	Team Leader	6-8 weeks before review.
Letter to Center Director	AMT	4-6 weeks before review.
Team Leader packet containing checklists and recent reviews.	AMT	4 weeks before review.
Entrance briefing.	Team Leader	First day of review.
Team briefing.	Applicable Center	First day of review.
Individual observations and recommendations.	Team Member	During review.
Exit briefing.	Team Leader	Last day of review.
Write review report, for to AMT.	Team Leader/ AMT assist	2-4 weeks after review.
Forward report to Program Office for review PO review and forward to Center Director.	AMT Signature/ Program Office	Within 1 week of receipt.
Center Director forwards review report response to Program Office.	Applicable Center	4-6 weeks after receipt of report.
Program Office reviews response and forwards to Code JI/JIF.	IPO	1-2 weeks after response receipt.
Analyze response for adequacy, follow-up, tracking, and closet.	Team Leader/AMT	As necessary.

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## Appendix D. Directions On the Use Of NASA Form 1653, Mission Management Aircraft Request

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1. This form was developed to satisfy the cost-comparison requirement specified by OMB Circular A-126. It is the standard for NASA and will be utilized and maintained for 2 years for all mission management aircraft requests regardless of travel classification.
2. The following directions will facilitate using the request form:
  - a. Requester: usually will be the Trip Coordinator.
  - b. Office Code/Phone: requesters information.
  - c. Aircraft requested: request an aircraft by Type (G-III, King Air) or by call sign (NASA-1, NASA-8).
  - d. Classification: check one, NASA's official responsibility does not include making speeches or routine site surveys; those fall into the "other official travel status."
  - e. Purpose: Provide cogent and complete rationale for the trip; be specific.
  - f. Itinerary: list city or airport if known.
    - (1) Plan departure times to arrive in time for commitments, allowing for delays.
    - (2) Use the remarks section to show special requirements or needs.
  - g. Passenger list: The status/legs columns are important for acquiring and maintaining information for reports to OMB; therefore, accuracy is important. See OMB Circular A-126 for additional guidance if needed. The legs column refers to the legs in the itinerary section.
  - h. The "approving official" is that person, usually one position level above the Senior Passenger who approves and certifies the trip, its purpose, and the status of all passengers. This official does not approve the use of the aircraft, only the trip request.
  - i. Commercial cost calculation: Commercial travel, hotel, and rental cost can be obtained from the travel office. Note: Contractors do not qualify for Government rates. Line 8 should reflect the total cost incurred by travel by commercial means.
  - j. NASA aircraft cost calculation: Information on variable cost per hour and number of hours can be obtained from the aircraft office or scheduler.
  - k. Cost comparison: Self explanatory.
  - l. Justification: Check all boxes that apply. Mission required -- equates to discharge of NASA official responsibility. If the reason for using NASA aircraft is due to "no commercial airline or aircraft service was reasonably available...", the requester must include information on the commercial aircraft schedules considered.
  - m. The General/Chief Counsel must review all requests for MMA when a "Senior Federal Official" is traveling in the "other official travel" category. This is only a review for compliance not approval. Authorizing official is that person who approves the use of the aircraft.

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[E. Certificate Of Airworthiness](#) In PDF Format.

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# Appendix F. Definitions

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## 1. Aircraft Classification

1.1. Research and Development. All aircraft directly related to the production or acquisition of data. This includes, but is not limited to, data acquired for aeronautics, Earth, space, or life sciences, meteorology, and photogrammetry.

1.2. Program Support. Aircraft used to support programs and operations other than the direct production and acquisition of data. This includes, but is not limited to, astronaut training, safety chase, photo chase, cargo transport, flight training, range surveillance, launch security, and command and control.

1.3. Mission Management. Those administrative aircraft certified by the Federal Aviation Administration and used primarily for passenger transport. These include aircraft used to transport management and staff personnel on official travel for the purpose of satisfying mission requirements or other travel for the conduct of agency business.

1.4. Inactive aircraft are those for which use in one of the classifications above has been completed and is in a nonoperational status either with potential for future use or awaiting disposition, on loan from NASA, used for spare parts, or acquired for future use.

## 2. NASA-Controlled Aircraft.

Aircraft which are bought, borrowed, leased, bailed, or otherwise procured or acquired, regardless of cost, from any source for the purpose of conducting NASA science, research, and/or other missions, and which are operated by NASA and/or whose operation is managed by NASA. Aircraft loaned by NASA to another agency/organization will not be considered NASA-controlled aircraft unless so stated by agreement.

## 3. NASA Aircraft Inventory.

All active NASA-controlled aircraft. Both active and inactive aircraft will be recorded on property control inventories.

## 4. Acquisition.

Any means of bringing an aircraft under NASA control or into the property control inventory.

## 5. Aircraft Modification.

Any alteration, addition, or removal of aircraft structure, components, equipment, computer software, or primary instrumentation. Routine maintenance is excepted from this definition.

## 6. Airworthiness.

Per FAA 8130.2C, Chapter. 1, paragraph 9. Generally, the capability of an aircraft to be operated within a prescribed flight envelope in a safe manner.

6.1. Configuration Control. Conformity to type design is considered attained when the aircraft configuration and the components installed are consistent with drawings, specifications, and other data that are part of the type certificate and would include any supplemental type certificates and field-approved alterations incorporated into the aircraft.

6.2. Aircraft Maintenance. The scheduled or unscheduled work on an aircraft that is required to attain or to sustain a

state of airworthiness and work meets all required standards, practices, and guidelines for airworthiness.

6.3. **Quality Assurance.** The act of attaining certainty that maintenance performed on aircraft meets all required airworthiness standards, regulations, practices, and guidelines.

## **7. Civil Aircraft.**

Aircraft other than public or military aircraft. Includes aircraft engaged in carrying persons or property for commercial purposes, such as air carrier, commuter, charter, and leased aircraft, and Government aircraft carrying passengers.

## **8. Public Aircraft.**

Aircraft used only in the service of a government or a political subdivision. It does not include Government-owned aircraft engaged in carrying persons or property for commercial purposes.

## **9. Bailed Aircraft.**

Any aircraft borrowed by a department or agency from DoD, State or local governments, or non-Federal entities. Thus, aircraft which are loaned to NASA, or which NASA loans to other entities, are "bailed" aircraft.

## **10. Disposition.**

Any means of deleting an aircraft from NASA control or from the property control inventory.

## **11. Flight Envelope.**

Aircraft performance limits or limitations approved by the aircraft manufacturer, DoD, FAA, or established by a formal NASA airworthiness review or by a supervisory operations official.

## **12. Hazard Analysis.**

The technique used to systematically identify, evaluate, resolve, and assess hazards.

## **13. Mission.**

Any aircraft flight other than routine pilot proficiency, aircraft maintenance, or logistics flight.

## **14. NASA Intercenter Aircraft Operations Panel (IAOP).**

The IAOP is composed of members from Centers that operate aircraft, representatives from the Aircraft Management Team (AMT), advisors from appropriate Centers, and the Office of Safety and Mission Quality, and points of contact from the Headquarters Program Offices.

## **15. Crew duty time**

is the total time a crew is on duty before the final termination of a flight. Crew duty time accrues consecutively and begins when a crew reports to a designated place of duty to begin preparation for a flight and ends 1 hour after block-in time.

## **16. Crew rest**

is provided to flight crewmembers in order to rest and eat. It includes crew transportation prior to participating in flight crew duties.

